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VOL. LXXXIII PART TWELVE

JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

DECEMBER 1958

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JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

VOL. LXXXIII PART TWELVE

December 1958

THE SECRETARY'S PAGE

ANNOUNCEMENTS—JANUARY

Shows

TUESDAY, January 27
12 NOON to 6 P.M.
WEDNESDAY, January 28
10 A.M. to 5 P.M.
} Fortnightly Flower Show, in the New Hall.

The Society is not holding any Flower Shows in December.

Lecture

TUESDAY, January 27, at 3 P.M. "The Winter Garden", by MR. G. S. THOMAS.

Joint Chrysanthemum Committee on December 9—The Joint Chrysanthemum Committee will meet on Tuesday, December 9, to consider novelties. Exhibits, together with completed forms, should be handed to the Secretary of the Committee by 11.30 A.M.

Committee Meetings on January 13, 1959—If necessary the Fruit and Vegetable Committee and the Orchid Committee will meet on Tuesday, January 13, 1959, to consider novelties. Anyone wishing to submit a novelty to either of these Committees on January 13 must inform the Secretary on or before January 5, 1959, so that the necessary arrangements may be made.

Annual General Meeting—The Annual General Meeting to receive the Report of the Council for 1958 and a statement of accounts

for that year will be held on Tuesday, February 24, 1959, at 3 P.M. The Meeting will be held in the Old Hall, as in 1958, in order that there may be ample room for all who wish to attend. It is hoped that as many Fellows as possible will be present.

Distribution of Surplus Seeds: New Arrangements—The annual distribution of surplus seeds from the Society's Gardens at Wisley to Fellows will take place during the first few weeks of 1959. A list of the seeds available, together with a form of application was sent with the November JOURNAL to all Fellows resident overseas. The completed forms should be returned to Wisley as soon as possible as the stocks of many seeds are small and soon exhausted.

No Lists or Forms are being sent to Fellows resident in the British Isles except upon request. Fellows resident in the British Isles (including the Channel Islands and Eire) **who wish to participate in the distribution should apply immediately for the list and form** to The Director (Seed Distribution), The Royal Horticultural Society's Gardens, Wisley, Ripley, Woking, Surrey, and enclose a stamped, addressed envelope. **The completed form must be returned so as to reach Wisley not later than December 31, 1958.**

Sandwich Bar in New Hall—For the convenience of Fellows and others who like to visit the Shows at midday but have only limited time, a Sandwich Bar at which a light lunch can be obtained quickly has been established in the basement of the New Hall.

Examination for the Teachers' Diploma in School Gardening—This Examination is intended for the professional teacher who is giving instruction in school gardening. Twenty candidates entered for the Intermediate Examination and seventeen reached the required standard in the written examination to go forward to the practical tests. Of those candidates fourteen received a pass in the examination as a whole, and will be eligible to proceed to the Final Examination if or when they are able to satisfy the regulations governing entry for that examination.

Thirteen candidates presented themselves for the Final Examination of whom twelve reached the required standard in the written examination to proceed to the practical tests. Eight candidates were successful in the examination as a whole, and the Diploma has been awarded as follows:

MR. N. G. BEVAN	MR. C. E. PENTIN
MR. J. N. CAMPBELL	MR. E. SANSBY
MR. E. HOWARD	MR. A. R. SMITH
MR. T. W. B. ILLSLEY	MR. H. WALLER

The Society's Examinations in 1959—Candidates wishing to enter for the Society's Examinations in Horticulture to be held in 1959 are reminded that the closing dates for the receipt of entry forms are as follows: General Examination in Horticulture—Monday, January 12, 1959; National Diploma in Horticulture, Intermediate and Final

Examinations, and N.D.H. Honours—Monday, February 2, 1959; Teachers' Diploma in School Gardening, Intermediate and Final Examinations—Monday, February 2, 1959.

Publications—The attention of Fellows is drawn to the leaflet and order form for Publications inserted in the November issue of the JOURNAL.

Journal and Botanical Magazine Binding—Arrangements have been made for those Fellows who so wish to have the JOURNAL bound in green cloth with the lettering and crest in gold. The cost for each volume of twelve parts will be 12*s*., including packing and postage. Fellows may also have the *Botanical Magazine* bound in dark blue buckram with gold lettering. The cost for each volume will be 16*s*. 6*d*., including packing and postage. Parts for binding should be sent with remittance to Messrs. Mansell (Bookbinders) Ltd., 41 Britannia Row, Essex Road, London, N.1. The parts should not be sent to the offices of the Society. Inquiries for binding in special styles should also be addressed direct to Messrs. Mansell (Bookbinders) Ltd.

NOTES FROM WISLEY

N. K. Gould

IT is not to be expected that many visitors would be attracted to Wisley during December, but some Fellows who live near by take advantage of dry days to spend a few pleasant hours there. While it would not be easy to compile a lengthy list of plants at their best now, there is endless variety of form and colour in the evergreen and deciduous trees in the open; and in the houses there are always plenty of tender plants to delight the eye.

The visitor will see various large-scale operations in progress, for winter is a season of great activity, when plans for alterations are put into effect, dead or broken trees are given attention and any necessary transplanting of large specimen shrubs is undertaken.

The rock-garden staff have the considerable task of top-dressing a large part of the area with fresh sterilized soil. Many of the smaller plants become loosened by hand-weeding as well as by heavy rain or frost and may require individual attention to re-firm them.

Grass walks and paths have long been one of the charms of Wisley, but the increased wear and tear brought about by larger numbers of visitors each year makes frequent renewal of turf and widening necessary. In certain parts where the traffic is very heavy more resistant material has had to take the place of grass. An example of this treatment can be seen at the south end of the alpine house where stepping-stones have been laid between the house and the annual border. While at this point, the visitor will note certain other changes. The herb borders

have been extended in length and during the season completely replanted. There are now over one hundred different varieties of culinary, medicinal and aromatic herbs in the borders. Near by there is an example of the extremely drastic pruning which can be sustained by an old hornbeam hedge. The one opposite the Weather Station was nearly 5 feet wide last winter when it was cut back to within 9 inches on each side of the main stems. During the current year it has produced an enormous number of new growths which have completely covered the pruned surfaces. Equally harsh treatment was given to the hedge of *Berberis stenophylla* surrounding the lower part of the alpine nursery and has had equally satisfactory results.

One of the most important, although unwelcome, winter tasks is the cleaning of the glasshouses, and every effort is made to get this finished before Christmas. A good many failures among plants grown under glass by amateurs can be traced to the lack of proper hygiene, and even in the smallest conservatory or greenhouse it is most desirable to clear out and remove all the plants at least once a year so that the inside can be overhauled. The routine as practised at Wisley is as follows.

The outside glass is scrubbed and washed down first and the inside of the house is next cleared as far as possible. In the vinery the rods are untied from their supporting wires and lowered so as to permit access. The inside of the rafters and glass are thoroughly scrubbed and hosed down. The brickwork and concrete are scrubbed and treated with a lime-cement wash. Where shingle or fine clinker is used on the benches, this is either thoroughly washed or completely renewed. The house is then thoroughly aired for a few days to allow the inside to dry.

The cleaning does not, of course, complete the work in the glasshouses. The borders of the vinery or peach house may need to be renewed or top-dressed, the vines and peaches have to be pruned, cleaned and tied back to the supports, and a large number of pot plants in the temperate house need attention in the way of pruning or re-potting.

The somewhat extensive alterations undertaken last winter in Howard's Field are now practically complete. This part of the gardens was used as an experimental orchard for about twenty-five years after the Society first came to Wisley and, during that period, some valuable early research work, concerned with the summer pruning of apples and the effects of growing grass in orchards, was done. The area was then laid out as an ornamental garden of trees and shrubs and, in particular, a large collection of varieties of lilac was planted there. With the passage of time many of the plants have become very much overgrown and some have had to be removed. The long riverside bank to the west of Howard's Field has been completely cleared of the vast collection of rose species which for so long have grown there. Many were of greater botanical than horticultural interest and became superfluous with the establishment of the comprehensive National Species collection at the John Innes Horticultural Institution at Bayfordbury. The bank has been sown with grass and planted over the whole of its length with a

collection of about fifty hybrid crab apples which were grown at Wisley from scions kindly presented in 1952 by the Men's Garden Club of Minneapolis. The collection includes the varieties 'Pixie', 'Kingsmere', 'Hopa', 'Katherine' and 'Red Silver'.

During the work in Howard's Field, many of the best deciduous trees have been pruned and given more space for their proper development. From the lilacs, suckers which had arisen from the base of the plants have been completely removed and, where necessary, the bushes have been cut back to encourage the growth of new wood.

The clearance has exposed more fully some excellent specimen shrubs and trees, notably some of the old-fashioned varieties of holly which, at this time of the year, are exceedingly ornamental.

The Wild Garden has also been the scene of a good deal of clearance. When this part of the gardens was first laid out, many hedges of the older varieties of *Rhododendron ponticum* were planted to provide a shelter for the more precious plants and shrubs, and some of these had grown so much that at one time the east side of the Wild Garden consisted of a dense thicket of rhododendrons through which a tunnel-like path ran for some distance. At the present time, space is too valuable to be used for such features and, little by little, the old rhododendron hedges are disappearing.

Visitors will notice that the old azalea garden which lies a little below the range of glasshouses has been largely demolished. While this part of the garden is, in some seasons, extremely lovely and is most popular with visitors, it lies unfortunately in a frost-pocket with the result that, in certain years, every flower is ruined by a late frost. At the top of Battleston Hill where the effects of spring frosts are much less disastrous, there are extensive new plantings of deciduous azaleas in the best varieties, sufficient to satisfy every possible need.

The woodland borders which were constructed on Battleston Hill to replace the overgrown hedges of yellow azaleas along the sides of the broad walk have been of interest all the season and they are of special value when the rhododendrons are over. The plants they contain are chosen to harmonize with the surroundings. In July the lilies and hostas were in flower, later the agapanthus contrasted well in habit with the lacecap hydrangeas and, as late as October, plenty of colour was still provided by kniphofias, fuchsias, *Hydrangea paniculata* and *Ceratostigma willmottianum*.

The year now drawing to a close has been noteworthy in some respects. One of its good points was the absence of May frosts, resulting in an abundant and lovely show of rhododendrons, camellias and lilacs. A much less agreeable feature was the excessive rain, which up to the end of September was twenty-five per cent above the normal, associated with a depressing shortage of sunshine. This weather seems to have suited sweet peas, which remained in flower for an unusually long time, delphiniums, which were very tall and floriferous, and dahlias, which were also favoured by mild weather up to the very end of October.

The flowering of chrysanthemums and Michaelmas Daisies was spoilt by the wet. Rhododendrons and evergreen shrubs generally have put on a lot of new growth, continuing later than usual, and it is possible that the number of flower-buds for next spring may be on the low side. This may not, of course, be completely disadvantageous as the plants have tended to flower rather too freely in the past year or two.

THE GARDENS AT HODNET HALL, SHROPSHIRE

Lanning Roper

WHEN we think of great shrub gardens our thoughts turn geographically to the West Country, and to counties like Sussex, Surrey, Kent and Gloucestershire, but less to counties in the Midlands and the North like Northampton and Shropshire. Most of us are not prepared to find in northern Shropshire a great garden such as Hodnet Hall, where the range of plants is extremely varied and there are many surprises for the gardener. Secondly, the standard of maintenance of this vast garden, with its series of pools and lakes of varying sizes covering over fifty acres, is remarkable as it is completely maintained by BRIGADIER A. G. W. HEBER-PERCY with a staff of three. A visiting Parks Superintendent suggested to the Brigadier that he must have a staff of at least twenty-four gardeners and was amazed when advised that a staff of only three was employed. Astounding as this may seem, especially when one realizes that the garden is perpetually in a state of expansion, it is a fact that has been corroborated by various authoritative sources. The answer, of course, lies to a large extent in the enthusiasm, energy and skilful planning of its owner and in the excellence of his staff. I stress these points at the outset as they make the account of the garden and the accompanying illustrations which follow even more remarkable than they may at first seem.

The large red-brick house in the late Elizabethan style was erected about 1870 and it commands a prominent position at the top of a flat plateau facing south above a large pond (Fig. 149). Below this central pond to the east there are smaller pools and above it to the west three more on a larger scale. This chain of water on different levels makes the central axis of the garden as well as the theme for the whole layout. When the garden was started in 1922 none of these pools were in existence. The large one in front of the house was a marshy hollow with the banks a mass of elders, laurels and rushes. The Brigadier, then a young man, took over and started on his gardening career with the grudging approval of his father. All went well until the bills for the draining and building of the pond arrived; then there was friction. This interest in gardening on the part of the Brigadier has continued with the years and today it has

become not only a full-time hobby but a full-time job as well, for Hodnet Hall, like many other estates, must pay its way, and the open days finance the garden and enable future expansion. It has been a very successful story to date and, of course, it cannot be denied that today much of the gardening is done with an eye to the public. This also is a factor to observe in the description of the garden, for Hodnet Hall offers at every season striking mass effects as well as individual plants of interest and merit.

The beauty of the countryside with vistas across some of the loveliest Shropshire farmland is a boon to any gardener. The view from the terrace over the pond to the rolling fields where a large dovecote makes a central feature on the horizon is a typical one (Fig. 151). To the west there is woodland which conceals more ponds, trickling streams and cascades, and loveliest of all, beech woods with bluebells as far as the eye can see. To my mind these vast slopes with magnificent forest trees of great age, ferns, wild flowers and especially bluebells are as lovely as any bit of English countryside that I know. Certainly it is fair to say that with these natural assets BRIGADIER HEBER-PERCY started with a distinct advantage over many of us. Through the years he has always been his own landscape architect, although he has had help with planting and propagation from various nurserymen and suppliers.

As the soil is lime-free there is scope for rhododendrons, camellias and other ericaceous plants which flourish in the acid soil; while the fairly high rainfall and moist position resulting from the presence of endless pools and streams are ideal for candelabra primulas, irises and bog plants which are a feature. The Brigadier has advanced the theory that the pools which are fed by numerous underwater springs have a great deal to do with the moderation of the temperature as they seldom freeze over and there is often a blanket of warm mist which keeps off severe frosts. Be that as it may, the range of plants grown is certainly a surprising one for northern Shropshire and many more tender shrubs are now being planted as an experiment.

The soil, which in many places overlays red sandstone, is a stiff clay that is excellent for growth as is borne out by the great size of the indigenous trees, which include beeches, oaks, sycamores and limes. The prevailing south-west winds are very strong at times, but fortunately much of the garden is sheltered by the natural slopes of the valley.

Starting at the east end of the garden, which is the lowest point, there is a broad gravel path which leads to a series of terraces. Here are well-established old trees of *Prunus subhirtella autumnalis*, *Malus floribunda*, and the violet-scented *M. coronaria* var. *charlottae* with semi-double flowers in early June when the other maluses have finished. The dove tree, *Davidia involucrata*, and its variety *vilmoriniana* are flourishing and flower freely each May. *Magnolia soulangiana* and its varieties have formed great spreading shrubs, and *M. kobus* has reached flowering size and is developing into a well-formed tree. The silvery *Pyrus salicifolia* var. *pendula* is delightful in a landscape which is always green

and lush. There is a particularly large-flowered form of *Halesia monticola vestita* and an unusual specimen of *Acer davidii* underplanted with polyanthuses. For autumn colour, which is generally good in this part of Shropshire, ***Liquidambar styraciflua***, *Parrotia persica* and *Cercidiphyllum japonicum* are growing rapidly. Judas trees have not done particularly well and seem to be rather tricky in this locality as they cannot be relied on to flower regularly. For brilliant colour in the spring, few trees can equal the intense coral and apricot colouring of *Acer pseudoplatanus* var. ***brilliantissimum***, while the golden variegated form of *Aralia elata* known as var. *aureomarginata* is superb throughout the spring and the summer as well.

To the east of the terraces and to the south of the old stables a new garden was laid out in the winter of 1957–8. This consists of curving shrub borders which are well placed in the light shade of the old trees. This area gives an excellent idea of the scale on which new developments are still being made. Here we find a clever combination of rhododendrons, pieris and camellias with flowering shrubs such as hydrangeas, eucryphias, fothergillas and the blue-berried *Symplocos paniculata* to prolong the season. Combined with these are suitable woodland herbaceous plants such as *Meconopsis grandis*, *Actaea spicata*, *Gentiana asclepiadea* and ***Smilacina racemosa*** with its arching stems, handsome foliage and scented terminal spikes of flowers. *Euphorbia wulfenii* and the colourful ***E. sikkimensis*** with its bright coppery red new leaves in spring are excellent. Ground covers for their foliage have been thought out with care and these include hostas, epimediums, *Alchemilla mollis*, ferns and primulas. In the centre of the curving lawn a round central bed of considerable dimensions has been planted with shrubby *Potentilla fruticosa* varieties such as ***farreri***, ***veitchii***, and 'Katherine Dykes', and with rose species and the large shrub roses such as *Rosa hugonis*, ×*pruhoniciana* (***hillieri***), ×***cantabrigiensis*** and 'Nevada'. I have described this new section in some detail as it gives a very fair indication of the scale on which additions to the garden are still being made without additional labour and the type of plants which are being selected.

This winter a whole new area is slated for development. This will be planted up largely with rhododendrons of the azalea type and with magnolias. There already is an excellent collection of the latter, including many of the better species and hybrids. Some of these, like *M. stellata*, ***soulangiana***, ***kobus*** and ***wilsonii***, are now well established, while others are rather younger plants which will not flower for some time. The important thing is that the planting policy at Hodnet Hall includes both the short-term and long-term trees and shrubs. Only by so doing can a really important collection be achieved as well as an immediate effect.

The old stable is an attractive building with its white-painted walls and dark timbering (Fig. 154). This now serves as a tea house and to the east of it a flower-bordered lawn makes a delightful setting for tables. Against the walls are a number of camellias including both *C. japonica*

and *C. sasanqua* varieties. *C.* × *williamsii* is, of course, outstanding. The vigorous climber *Eccremocarpus scaber* with its scarlet flowers is a feature here. This rather tender Chilean climber grows vigorously and seeds itself in the paving-stones. On the west side of the stable there is a large plant of *Camellia japonica* 'Jupiter' and a fine covering of *Schizophragma integrifolium*. The cobbled forecourt on the north side has attractive plantings with pink predominating. Pink cabbage roses, pink and blue varieties of *Clematis macropetala*, pink hydrangeas and the woolly leaves of *Stachys lanata* as a ground cover are effective. Though eremuruses and astilbes are a feature in the borders, tree paeonies, bush roses and shrubs predominate. Fine viburnums, *Sophora japonica* var. *pendula*, *Syringa velutina*, the blue-podded *Decaisnea fargesii*, which fruits consistently, and the lovely *Kolkwitzia amabilis* are a few plants worthy of note.

Working our way towards the large pond in front of the house we pass a series of small pools connected by streams with cascades (Fig. 152). These are delightful with marginal planting of irises, rodgersias, astilbes, candelabra primulas, ferns and gunneras. One small pool (Fig. 150) with the delightful title of "Horse Wash Pool", for obvious reasons in view of its close proximity to the old stable, has a setting of larch trees, golden laburnums, mixed purple lilacs and a giant-walnut tree, while its banks are planted with *Primula* 'Postford White', *P. altaica*, white astilbes and massed azaleas. Lead herons lend an exotic note.

Near by on the lawn is a large group of blue delphiniums backed by philadelphus and a *Davidia*. This planting is very effective when seen at a distance across the lawn or from the upper terrace. In this area there is a very large specimen of *Mahonia japonica*, well furnished with side shoots and covering a wide area. Other shrubs worthy of note are large clumps of *Hydrangea sargentiana* and *H. villosa*, both of which are a feature in midsummer, as is the rather tender *Phygelius capensis*. There are masses of rhododendrons including 'Loder's White', various forms of Loderi, 'Lady Bessborough', *augustinii*, *wardii* and endless hybrids of both the hardy type like 'Old Port', 'Britannia' and 'Ascot Brilliant' as well as many of the newer hybrids.

It is interesting to note plants that were cut in this area in the spring of 1958, when late frosts and more especially the cold winds took such a heavy toll. The pattern of damage is curious. *Pieris forrestii*, *Hamamelis mollis*, *Embothrium coccineum* and *Hoheria lyallii*, although well established, were badly cut, while camellias, *Phygelius capensis*, *Magnolia grandiflora* and *Hydrangea sargentiana* came through untouched.

At the east end of the plateau on which the house is built there is a red sandstone cliff, or rather quarry face. Steps lead down past the old pigsties hollowed in the soft stone. At the bottom is a large circular area which has been developed as a rose garden. There are concentric circular beds with grass paths between. The outer ring is planted with mixed paeonies, the inner ones with roses, while the central bed with

a stone statue in the centre has been devoted to *Hydrangea paniculata* var. *grandiflora* and *Caryopteris clandonensis*. This unusual combination ensures a succession of bloom over a very long period. High above it is a rustic summerhouse with lovely views down on the rose garden and across the pools on the lower lawn to the old stable beyond.

A path circles the pond in front of the house. From the far side there is an excellent view of the slopes with massed plantings of heathers, berberis, rose species, rhododendrons and brooms which flank the broad steps. A stream runs beside the path on the far side and it is delightful to walk along the grassy path with water on both sides (Fig. 148). In spring there is a curtain of flowering cherry bordering the stream. Swans glide across the pond, and grey Canadian geese ripple its surface.

This path leads to a third pool, long and rather narrow. Here there is a highly developed water garden with mass plantings on a very large scale of candelabra primulas, *Iris kaempferi*, giant-leaved gunneras and astilbes, the last planted in great drifts of a single variety so that there are broad areas of white, rose and red. It is no exaggeration to say that there are thousands of plants. Then there are delightful plants like native ferns, mimulus, king-cups and bluebells. *Trillium grandiflorum* grows on the mossy banks, happy in its cool, moist position. Large stepping-stones wind through the plantings, and clumps of waterlilies carry the colour across the surface of the pool, breaking the reflections of the rhododendrons and Japanese maples on the banks. On the north side is a charming little valley, at the head of which there are superb beech trees. The slopes below have been planted with broad clumps of *Rhododendron impeditum*, 'Blue Tit' and *R. williamsianum* with its bronzed foliage. At the bottom of the sweep there is a large weeping cherry, well placed so that its fine shape can be appreciated (Fig. 147).

At the head of the third pool there is a rocky cascade and a bridge across the pond head of the fourth pool. This last one in many ways is the most lovely of all, for here is a long beautifully clear expanse of water which loses itself at its upper end among the great forest trees. Trout abound, many of them two-pounders, and wild duck and waterfowl skim the surfaces. Fine oaks and beech are lovely together, for both have great character in their sturdy, rugged growth. The bronze-tinted new leaves of the former contrast with the delicate silvery green of the beeches in spring, becoming a wonderful riot of russet and gold in autumn. The dark green of ponticums, geans and an occasional thorn tree make a perfect background for white birches and brooms on the banks strewn with wild flowers. This upper pool with its expanse of sky and sudden views to the Shropshire landscape is a delightful foil for the brilliant colours and massed plantings of the pools below.

Still further on, new pools are being developed and last spring bulldozers and cranes were at work to continue this series of natural water gardens, made possible by the stream and the many springs.

To the west of the house there is a formal yew-enclosed rose garden and beyond it a vast stretch of meadow which has been planted with

thousands of daffodils. Groups of Canadian maples and scarlet oaks including *Quercus coccinea* 'Knaphill Scarlet' have been planted for autumn colour. In early summer this area is particularly lovely with the silver of the poplars, the golden tinged greens of the oaks and the great masses of white May.

Along the south front of the house there are broad herbaceous borders below the terrace balustrade for a show of colour in summer. Against the house we find roses, japonicas, wistarias, and two very old *Magnolia grandiflora*, one on the east wall of the west wing, the other on the west wall of the east wing. The latter is now 25 feet tall, and flowers superbly; the other which is less tall never flowers. Here is an interesting example of how a planting position can control both growth and flowering.

A recent addition to the garden is a wide collection of choice plants from the well-known garden of CAPT. STOKES, Longdon, Rugeley, Staffs.

Hodnet Hall is a garden of great interest due to its geographical position and as an example of a garden which has been carefully planted to provide a show of colour throughout the seasons. The daffodils and blossoms in early spring are followed by a burst of rhododendrons, Exbury azaleas, laburnums and lilacs, and then by paeonies and roses, astilbes and primulas. The summer borders, the masses of hydrangeas and the late summer shrubs follow on and in the autumn there are brilliant foliage and berries. All has been planned, and over and above the general effect there are many interesting and unusual plants as well.

GERBERAS

H. Fairbank

WITH the introduction of improved types and better strains of gerbera from Holland and the United States of America during recent years it is not altogether surprising that interest in this attractive flower has increased, and enquiries concerning its cultivation have been coming in from various sources, particularly from commercial growers in this country.

The plant is by no means new to this country and has been exhibited at the Chelsea Show since many years ago by the late MR. CARL ENGELMANN of Saffron Walden, and later by several other people. Modern gerberas include a wide range of very attractive colours, the flowers are borne on long stems and are often 5 or 6 inches in diameter, although it is not always the larger blooms that create the greatest interest.

That the plant has not been more widely grown, since it appears to excite interest wherever it is shown, is probably due to the fact that it is not an easy plant to grow, its requirements are not precisely known, and individual plants vary in their behaviour when grown under identical

conditions of soil and climate, and in some respects the gerbera still remains something of a mystery plant. Experimental work has been carried out with gerbera in both Holland and America and also in Germany, more particularly with regard to propagation by vegetative means which, incidentally, seems to be a very necessary undertaking if this plant is ever to become as widely grown as its quality and attractiveness seem to merit.

Having been asked by the editor to provide an article for the JOURNAL on gerberas I should, I think, make it quite clear that such experience and knowledge that I have has been gained somewhat fortuitously and the plants with which I have had experience have, by force of circumstances, been grown under a particular system, and one which, incidentally is not generally recommended.

During the year 1949 I received from a friend in South Africa a packet of gerbera seed of a commercial grower's strain. I then had no facilities of my own for growing the plants under glass but as I was then taking over the newly acquired Experimental Horticulture Station at Luddington I was able to arrange for the seed to be sown in a heated house, but when grown large enough to plant into flowering quarters the only space available was in an unheated Dutch light structure of low altitude. From the outset the plants made good progress and although they varied in vigour and quality they seemed to thrive under the conditions given them. Some variation in the soil conditions was introduced in the hope of some light being shed on the requirements of the plant with which we had then practically no experience. These variations included additions of peat, of lime, high and low nitrogen conditions.

As already stated there was considerable variation in the behaviour of the plants which did not seem to be associated in any way with the different conditions provided. In this preliminary work the plants were planted in the border and, because there was no way of heating the structure during the winter the plants were forced into a rest by withholding water from late September onwards. In addition the plants were protected during the winter with a covering of dry straw. It is interesting to note that apart from some plants situated near the outside, which did not dry out as thoroughly as we should have liked, very few losses were experienced although the winter was quite severe at times. The gerbera can, it seems, withstand quite low temperatures if the other conditions are satisfactory. This method of overwintering has since been adopted every winter at Luddington. Whether it is the right one it is difficult to say, but it seems to work.

During 1953 some seed of an American strain was acquired through the good offices of an interested grower, MR. GODBER of Cornwall. It was decided to use these in a more critical trial in an attempt to discover the nutrient requirements of gerbera. For this purpose the plants were grown in soils of varying pH status, the treatments superimposed being such as, it was hoped, would indicate the requirements of the plant in

respect of nitrogen, potash, phosphate and magnesium. The plants behaved so erratically with apparently little relation to the treatments applied that the trial was eventually abandoned, or at least postponed until such time as a more uniform batch of plants was available. Attention was turned immediately to finding a quicker method of vegetative propagation than by ordinary plant division which, although quite effective, proved to be laboriously slow.

The outstanding feature of this trial was the very marked superiority of this American strain over that from South Africa or from any other source that had then been tried. The flowers were larger, the stems longer, and there was a much wider range of colours. The plants attracted considerable attention and it was decided to use the strain in any future experimental work and at the same time to build up clones of the most noteworthy plants by the only method known to us, namely, division. Simultaneously efforts were made to propagate from root cuttings without success.

The importance, both from the experimental angle and from the commercial grower's point of view, of being able to propagate gerbera rapidly by vegetative means cannot be over-emphasized. It would seem that only by careful selection and propagation from the selected plants is it possible to build up a stock of plants that will prove satisfactory, uniform in vigour and productiveness and generally profitable to grow. It was with considerable interest therefore that our attention was drawn to two articles that appeared in a German publication, *Gartenwelt*: (*a*) "Vegetative Propagation of Gerbera", by DR. BOSIAN, Principal of the Botanical Department, Institute of Viniculture, Fruit Cultivation and Horticulture, *Gartenwelt*, Vol. 54, No. 14, pp. 233–4, Hamburg, July 1954; (*b*) "The Breeding and Cultivation of Gerbera in Holland", by K. H. MUCKE (Dipl. Horticulture), Weihenstephan, *Gartenwelt*, September 15, 1956, pp. 292–3.

DR. BOSIAN carried out experimental work on the vegetative propagation of gerberas in 1938 and 1939 with the object of finding new methods. The results of these experiments, although published at the time, did not receive a great deal of publicity, probably owing to the outbreak of war, but they were re-published in *Gartenwelt* in 1954 as indicated. DR. BOSIAN confirmed the fact that gerberas can be propagated quite successfully by division without any difficulty at all, anything from five to seven young plants being obtainable from each parent plant according to size. But this method is much too slow and DR. BOSIAN went on to experiment with cuttings. The first method described consisted of dividing the young plants obtained in the ordinary way by division into two parts by pinching the young plant in half, using the fingers and not a knife, the top half of the plant or leaf crown was then inserted in the propagating medium and produced roots, and the lower half with its section of rhizome and few roots attached was similarly treated and in due course produced leaves. By this means the number of young plants obtained from the parent plant was doubled. The second method that

DR. BOSIAN describes consisted of cutting up the young plants obtained by division in such a way that each section had one or two leaves attached together with a few "thread roots".

DR. BOSIAN then went on to propagate by means of one-leaf and two-leaf cuttings from the plants obtained by his first method of dividing the young plants into two. In this he claims to have been quite successful, forty to fifty young plants being obtained from one parent plant.

It is reported that these experiments were carried out in out-door hot beds in August and September 1938. The soil temperature in the bed fluctuated between 18 and 25° C. and the bed was fitted with a wire grid on which rested a 10-cm. deep layer of well-watered coarse peat, on top of which a 10–12-cm. deep layer of sand and peat mixture was placed. Finally, a covering of clean Rhine sand 1–2 cm. deep.

Facilities for developing experimental work on gerberas at Luddington were at this time extremely limited, especially for propagating, but attempts were made to use the methods described by DR. BOSIAN. It was not however possible to do so at the same time of year or under precisely the same conditions. Nevertheless, in spite of trouble with *Botrytis*, it was clearly established that gerbera can be propagated more easily than had been hitherto believed and, given the correct conditions, a high rate of increase could be expected.

The later article in *Gartenwelt*, by K. H. MUCKE, gives no recommendations for vegetative propagation but gives some information based on the results of experimental work on the nutritional needs of the plant and the difficulties encountered by attacks of *Fusarium* and *Verticilium*. One Dutch firm at least seems to have achieved success by growing gerbera in gravel, with regular additions of fertilizer solution, the main purpose being to escape these two diseases. Apparently it is important to keep a careful check on the pH, which should be between 5 and 7. Higher alkalinity produced longer stems but fewer flowers.

Other articles dealing with the cultivation of gerbera have appeared from time to time, mostly in foreign or overseas publications. JOHN A. ROBINSON, writing in the *New Zealand Gardener* on "The Modern Gerbera" in 1955–6, states that the first doubles were produced by a Frenchman, M. DUBOIS, and taken to New Zealand by him. M. DUBOIS was known as "the father of the modern gerbera". MR. ROBINSON recommends that the plants should be given plenty of water during the summer and kept fairly dry during the winter. A slightly acid soil is recommended and the gerbera is spoken of as a gross feeder. Information is also given about hybridization and the raising of "doubles".

CONRAD B. LINK, writing in *The Maryland Florist* in August 1957, reports that gerberas are grown in the milder parts of the U.S.A. and in California it is grown as an outdoor commercial flower crop. His general recommendations for the culture of gerberas follow those of other growers who have had experience with them, for instance, a slightly acid soil, plenty of water during the growing period and heavy feeding.

RICHARD F. STINSON of the Michigan State University, writing in *The Florist's Review*, mentions a method of propagation by stem cuttings and deals with other details of cultivation.

Whilst all these various writers do not disagree fundamentally in their recommendations they are all writing from experience gained abroad and under conditions different from those which obtain here. The fact that gerberas are not widely grown in England, and yet are recognized as a good florist's flower seems to indicate that there are difficulties in its cultivation. It is possible that these difficulties have been exaggerated, and I would like to give a brief description of a comparatively simple system of cultivation which, on a small scale, has worked satisfactorily and which I believe could be adopted commercially:

(*a*) Firstly, it is essential to get a good strain of seed and the best strain I have seen came from California. Unfortunately the grower from whom the seed was obtained has now gone out of business but it is possible that an equally good strain could be obtained from other growers in America.

(*b*) The seed should be sown as soon as received and when new seed has been used we have never had any germination problems when sown in seed trays in a John Innes seed compost and placed in a propagating house in a temperature of 60–65° F. The time of sowing has varied according to the time that seed became available. Seed from plants grown in England under the system here described could be available by late June or July and reasonably good plants should thus be available for planting into their flowering quarters the following spring or early summer.

(*c*) Gerberas seem to thrive better when planted in the glasshouse border than they do in pots. The drainage must be good, the soil should be in a high state of fertility with plenty of organic matter present. The soil should be slightly acid with a pH of about 6·5.

(*d*) If the plants are to be grown in an unheated house, such as a Dutch light structure, planting can safely be carried out in April. Earlier planting should be satisfactory in a heated house where the temperature could be maintained at from 40–50° F. I do not think it would be wise to subject young plants to too low a temperature, though older plants will not suffer injury at temperatures below freezing point.

(*e*) Seed sown the previous summer should provide good sturdy plants in 3-inch pots for planting the following April. Planting should be done with a trowel, and 15 inches apart all ways seems to be a satisfactory distance. At this spacing the plants can be left down for three or four years provided they remain healthy.

(*f*) No shading is necessary but the plants should receive adequate supplies of water. When not actually in flower the plants can be sprayed overhead. This will tend to reduce the danger from red spider which can sometimes be very troublesome.

(*g*) The flowers should be cut when fully open and should be

allowed to stand in water for an hour or two before being packed for market. The somewhat elaborate method of protecting each individual bloom by means of a paper cup seems to be quite unnecessary. First-grade blooms can be packed singly in much the same way as carnations, the smaller blooms can be bunched, six blooms per bunch.

(*h*) Flower salesmen sometimes say that the demand is somewhat limited but I have never seen a low price returned by salesmen for well-grown gerberas, and if proper selection can be made of the most prolific plants and those producing flowers of good form and colour the crop should give a satisfactory return when grown on a commercial scale.

(*i*) The plants will continue to flower throughout the summer, in fact it is generally necessary to force them into a rest by withholding water if they are to survive the winter in an unheated house. Under these conditions the water applied should be gradually reduced from September onwards and the plants protected by means of dry straw or litter during the coldest winter months. This litter can be cleared away the following March, the beds cleaned off and water applied to start the plants off for the following year.

(*j*) Never having grown gerberas in a heated house I cannot pass an opinion as to whether it would prove economical to provide heat throughout the winter and allow the plants to continue to flower as long as they will.

(*k*) As already stated plants raised from seed are subject to considerable variation in almost every respect and just as it is unprofitable for a poultry keeper to keep bad layers so it must be unprofitable for a gerbera grower to tolerate plants which produce too few flowers. A grower starting from scratch with a batch of plants raised from seed should, from the outset, take note of which plants produce freely good quality bloom and gradually build up a good stock by means of vegetative propagation by one or other of the methods previously mentioned. It will take time, but in the long run I believe it will prove worth while.

(*l*) Although the plants will be subject to the same degree of variation one would expect seed saved from selected plants to provide a better stock than otherwise, but the same careful selection and building up of stock must necessarily follow.

(*m*) Seed saving is not quite such a straightforward process as one might expect. The male and female flowers do not mature together. The male flowers are situated in the centre of the flower head and the females on the outside and the stigmas are not receptive when the pollen from the male flowers is available, consequently cross-pollination from another flower head is necessary. This pollination is best carried out on a warm sunny day.

(*n*) I have said little about manuring or pest and disease control, both of which are important. As regards manuring we do not know the exact requirements of the plants. They appear to be gross feeders and an annual application of a good general fertilizer would seem to be

necessary. Gerberas seem to enjoy fairly high nitrogen conditions and, in addition to inorganic sources, like sulphate of ammonia or nitro-chalk, some of the organic forms such as hoof and horn or meat and bone meal might well be justified for this crop.

(*o*) Red spider seems to be the chief pest and there are various ways of controlling this, including some of the new systemic insecticides which could quite safely be used on a crop such as gerberas. Thrips are sometimes troublesome causing flower distortion and colour breaking. These are generally controlled satisfactorily with D.D.T. emulsion.

(*p*) The diseases to which the gerbera is subject are much more troublesome than the pests. Foremost I think is *Botrytis*, especially when the plants are grown under cold conditions. Experimental work is still in progress with a view to finding the best method of control. The use of a gravel or peat mulch has also been tried and found successful in some cases. Certainly it seems important to keep the crown of the plant growing under fairly dry conditions, either by planting high or by means of a mulch such as that suggested.

SELECTIVE BIRD DAMAGE ON PEARS IN WINTER

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(*R.H.S. Gardens, Wisley*)

DAMAGE by birds to all types of horticultural and agricultural crops has always occurred to a greater or lesser degree, but in recent years the severity and extent of attacks, particularly to the dormant buds of fruit trees and bushes, have reached such proportions that they now constitute a major problem to growers in all parts of the country. A wide range of fruits is involved, the worst affected being pears, plums, and gooseberries, although apples, peaches, and redcurrants do not escape attention. In some cases winter bud damage on gooseberry plantations has become so severe that growers have decided to cut their losses and utilize their land for a safer crop. Apart from damage to buds, there is of course always the risk of birds feeding on the mature fruit later in the season. While this is probably an even more frustrating and equally difficult aspect of the problem, the purpose of this article is to deal with the losses resulting from the stripping of the dormant buds, of pears in particular.

This damage is by now so familiar that it scarcely requires description. In most cases it is the plump, nutritious fruit buds which are taken, so that the potential crop is lost, or greatly reduced, long before the new season has started. In order to attack the soft internal bud tissues the birds often pick off the outer scales and drop them on the ground and, on seeing this litter under the tree, many gardeners

assume that the buds have simply been torn off in sheer wanton destruction. However, examination of the crop contents of bullfinches has shown that, in the case of these important pests at any rate, this is not so, and that the buds are, in fact, eaten. (English, W. S., 1953, *Agriculture*, London, **60**, 9, 426–9.) Neither is it likely, as has been suggested, that the buds are attacked in order to obtain any insects they contain, and in any case such a suggestion is of little practical help to the grower who has had his crop decimated by birds. In some cases buds are merely pecked and damaged, possibly because the bird was disturbed while feeding, but the ultimate result is the same, since these injured buds usually fail to develop at flowering time.

In the attempt to find reasons for the general increase of winter bud damage, a surprising ignorance of the habits and physiology of birds has been revealed. In some years the damage is worse than in others, and this does not necessarily seem to be related to the severity of the weather or the amount of other food available. In one locality the attacks may be more severe than in another and the type of fruit most heavily attacked may vary in different years and in different localities. The reasons are not fully understood. Similarly, not enough is known about the senses of taste and smell of birds to enable a satisfactory repellent to be devised. The seriousness of the problem has prompted the Ministry of Agriculture to appoint a number of scientists to conduct investigations on bird damage and possible means of control and prevention. Their task is, by its nature, a slow and difficult one, since much of their work can only be carried out in the dormant season. Consequently, a winter in which little or no damage occurs can mean a further delay of a year before their work can be resumed.

The severe winter damage which has been experienced in recent years was first noticed at Wisley during the winter of 1954–55. In November, 1954, many branches of plums in the Model Fruit Gardens were seen to have been stripped of practically all their fruit buds, and this was followed in January and February, 1955, by similar destruction to pears. The Model Fruit Gardens are laid out as three plots—large, medium and small (Text Fig. 1)—in which most of the pears are grown as oblique cordons and each including three or four trees of each of the following varieties planted in the same order: 'Williams' Bon Chrétien', 'Fondante d'Automne', 'Conference', 'Doyenné du Comice', 'Laxton's Superb'. It became apparent that, whereas the birds seemed quite indiscriminate in their attacks on the plums such was not the case on pears. It was observed that *on each plot* both 'Williams' Bon Chrétien' and 'Laxton's Superb' were stripped of their buds, but 'Doyenné du Comice' remained virtually unharmed. The other varieties may have suffered a little damage but this was not severe enough to affect the crop seriously. The impression gained from the casual observations made was that, on widely separated rows, the same varieties had been singled out for attack whereas other varieties within $2\frac{1}{2}$ feet of them were left alone. Examination of the only other pears on

FIG. 146—Rose 'Christian Dior' **A.M.** July 15, 1958. Raised by M. FRANCIS MEILLAND and shown by Messrs. Wheatcroft Bros. Ltd., Ruddington, Nottingham (see p. 490, November JOURNAL)

Photo, J. E. Downward

THE GARDENS OF HODNET HALL

FIG. 147—A view across one of the ponds, with azaleas against a background of forest trees (see p. 502)

FIG. 147—A view across one of the ponds, with azaleas against a background of forest trees (see p. 502)

Photo, J. E. Downward

FIG. 148—The path leading from the luxuriant water garden follows a narrow ridge between the large pond and a running stream (see p. 502)

FIG. 149—A view of the south front of the house with the steep slope well planted with flowering shrubs (see p. 498)

Photos, J. E. Downward

FIG. 150—A charming pool with laburnums and massed azaleas and ferns, typical of the planting at Hodnet Hall (see p. 501)

FIG. 151—The vista from the terrace of the house across the large pond to a dovecote, well placed in the lovely Shropshire landscape (see p. 499)

Photos, J. E. Downward

FIG. 152—The lower pool in a setting of well-kept lawns, fine trees and luxuriant waterside planting (see p. 501)

FIG. 153—The broad grass path leading from the lower lawn to the house

Photos, J. E. Downward

FIG. 154—The old stable, part of which is now a tea-house, seen from a path leading through new shrubberies and massed rhododendrons (see p. 500)

PROPAGATION BY CUTTINGS UNDER POLYTHENE COVERS

FIG. 155—Pan of cuttings shown in the foreground. In the background, framework of bamboo and wire on right, on left, the completed covering (see p. 515)

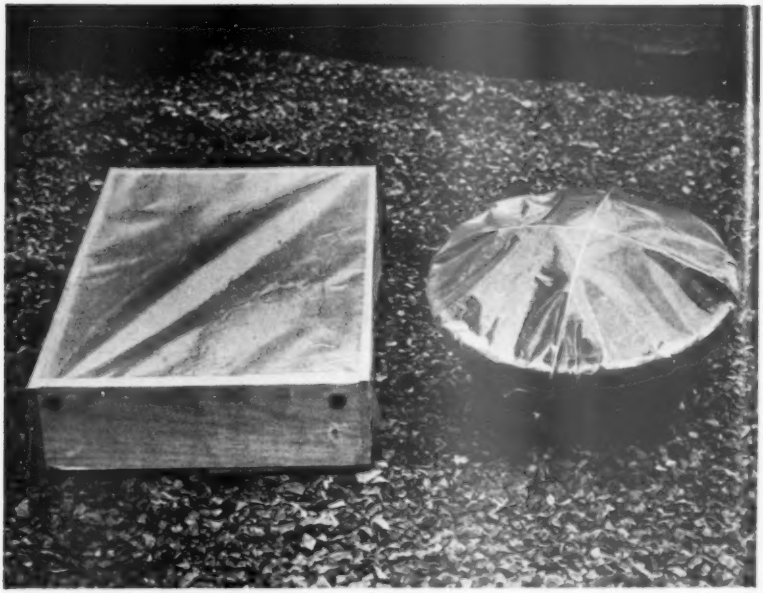


FIG. 156—Propagation of seeds in boxes and pans under polythene covers (see p. 516)

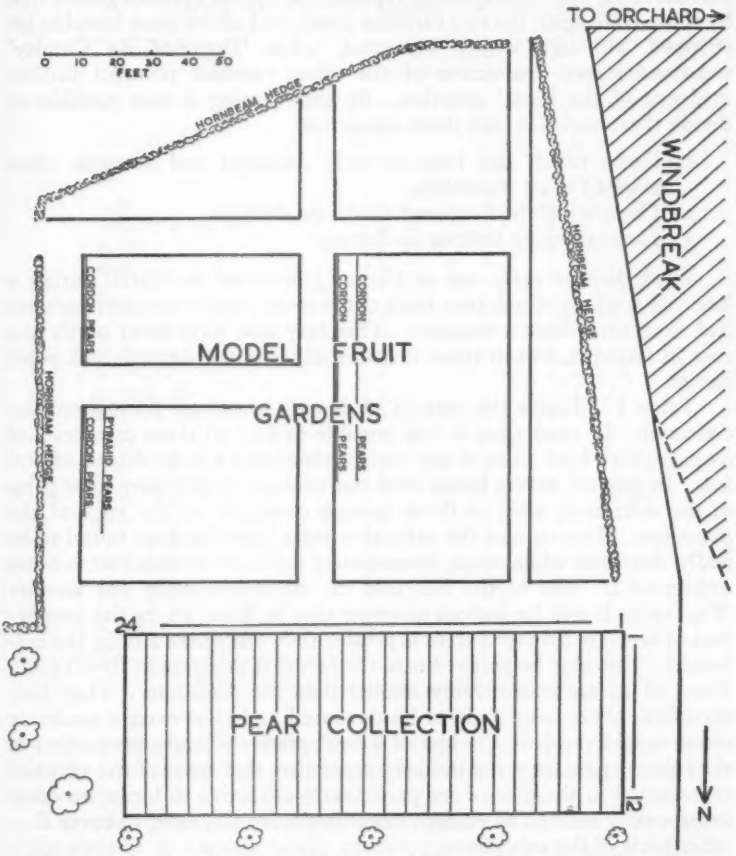
Photo, R. P. Scase

DAMAGE TO PEARS BY BIRDS IN WINTER

FIG. 157—Left, 'Laxton's Superb', right, 'Doyenné du Comice', in the Model Fruit Gardens, R.H.S. Gardens, Wisley (see p. 512)

the Model Fruit Gardens, a row of dwarf pyramids, also bore this out, the same varieties being represented with the exclusion only of 'Fondante d'Automne'.

The winters of 1955–56 and 1956–57 passed with little or no damage



TEXT FIG. 1—Sketch Plan of Model Fruit Gardens and Pear Collection

at Wisley, but quite suddenly, in late January, 1958, severe attacks occurred on the pears. Whereas on earlier occasions the culprits had not been observed, this time the damage was seen to be done by bullfinches. An examination showed that once more the pattern of damage noted in 1954–55 had been repeated, the varieties 'Williams' Bon Chrétien' and 'Laxton's Superb' having been singled out while adjacent trees of 'Doyenné du Comice' remained unscathed.

At this point observations were turned to a large collection of pears adjoining the Model Fruit Gardens. These are all grown as oblique cordons and well over 200 varieties are represented, including most of the better known ones. The collection is in a block of twenty-four parallel rows, each variety being represented by two cordons grown side by side. Here again the two varieties mentioned above were found to be stripped, although widely separated, while 'Doyenné du Comice' remained intact. Inspection of the other varieties revealed further evidence of the birds' selection. By early spring it was possible to divide these varieties into three categories.

1. Those which had been severely damaged and in some cases stripped of all fruit buds.
2. Those which had suffered moderate damage.
3. Those showing little or no damage.

What damage there was in Group 3 occurred in March during a late cold spell, by which time buds of the more heavily attacked varieties had long since been exhausted. This may also have been partly the case in Group 2, but in these varieties much of the damage took place earlier.

Table I indicates the pattern of damage sustained throughout the collection. In most rows it was possible to find all three categories of damage, with both trees of any variety showing a similar degree of bud loss. In general, severe losses were not confined to any particular parts of the collection, such as those nearest cover, or on the edge of the plantation. Throughout the collection some varieties were found to be badly damaged while those immediately adjacent to them were often unharmed in spite of the fact that the cordons overlap one another (Fig. 157). It will be noticed however that in Rows 15–24 the proportion of severely damaged trees is greater than elsewhere among the collection. This may be partly due to the fact that the trees in Row 15 and Rows 18–24 are considerably smaller than the remainder. They had, therefore, fewer fruit buds to be devoured and thus even a moderate attack would result in the loss of a comparatively larger proportion of the fruit. Apart from the unlikely possibility that most of the varieties represented in these rows are particularly attractive to birds, no other cause would seem to be evident since they were no nearer to cover than other parts of the collection.

The incidence of bird damage on trees growing close to thick cover such as copses, hedges, etc., is naturally greater than in more open areas, and the layout of the fruit at Wisley has demonstrated this well. The Model Fruit Gardens and the pear collection are surrounded on three sides by hornbeam hedges, while on the west side is also a thick wind-break of pines and other trees. On the other side of this wind-break is the large varietal collection of apples and plums as well as a number of fan-trained trees which include several pears, among them 'Laxton's Superb'. Although only 100 yards from the Model Fruit Gardens this

TABLE I

The distribution of winter bird damage in the collection of pear varieties, Wisley, 1958

Row No.	Variety Numbers and Degree of Damage sustained		
	Severe	Moderate	Negligible
1	7, 8, 11, 12	6, 10	1, 2, 3, 4, 5, 9
2	1, 2, 4, 8, 9	3, 5, 10	6, 11, 12
3	10	2, 3, 9, 12	1, 4, 5, 6, 7, 8, 11
4	7, 9	2	1, 3, 4, 5, 6, 8, 10, 11, 12
5	2, 3, 6, 9, 10, 11	4, 5	1, 7, 8, 12
6	5, 11	2, 7, 10	1, 3, 4, 6, 8, 9, 12
7	4, 5, 9	6, 7	1, 2, 3, 8, 10, 11, 12
8	2	3, 5, 6	1, 4, 7, 8, 9, 10, 11, 12
9	1, 2, 8	7, 9	3, 4, 5, 6, 10, 11, 12
10	5, 7, 8, 11	2, 3, 10, 12	1, 3, 6, 9
11	2, 3, 6, 7	5, 10	1, 4, 6, 9, 11, 12
12	9, 10, 11	8	1, 2, 3, 4, 5, 6, 7, 12
13	6, 7, 8, 10	3, 9	1, 2, 4, 11, 12
14	6, 7, 10, 12	1, 4, 5, 8, 9	2, 3, 11
15	1, 2, 4, 7, 8, 9, 10, 12	6	3, 5, 11
16	1, 5, 6, 7, 8, 9, 10, 11, 12	—	2, 3, 4
17	2, 3, 7, 8, 9, 10, 11, 12	5, 6	1, 4
18*	5, 6, 8, 9, 10, 11, 12	1, 3	2, 4
19	1, 2, 3, 4, 5, 7, 8, 9, 10, 12	6	11
20	2, 3, 4, 5, 6, 7, 8, 9, 10	1, 11	12
21*	6, 8, 9, 10	2	1, 3, 4, 5
22	1, 2, 3, 4, 5, 8, 10, 11	7	6, 9, 12
23	1, 2, 3, 4, 6, 9, 10, 12	5, 8	7, 11
24	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	—	1

* In these rows some trees are missing.

tree was untouched by birds due to its open position. Farther away from the wind-break the 5-acre collection of plums was similarly free from damage.

The information given above is in the nature of a preliminary record of the pattern of damage which occurred at Wisley in 1958. A list of the better-known pears, showing the degree of damage sustained by each, is appended below. Further observations will be made to ascertain whether, in future seasons, there is a repetition of the selection of pear varieties which was apparent in 1958. Preferences by birds have previously been noted by other observers on limited ranges of pear varieties but no one has yet been able to account for it. It would seem that an investigation of this aspect, for which the unique collections at Wisley are admirably suited, would yield interesting information which could well provide a clue to enable efficient repellents to be developed.

The following list would then prove more useful than the mere summary of observations which it at present represents.

TABLE II

The more widely listed varieties of pears in the collection at Wisley showing degree of winter bud damage sustained early in 1958

S = severe M = moderate N = negligible

Variety	*Damage*	*Variety*	*Damage*
Admiral Gervais	S	Comte de Lamy	N
André Desportes	N	Comte de Paris	M
Autumn Nelis	S	Conference	M
Baronne de Mello	N	Crawford	S
Beacon	N	Dana's Hovey	N
Belle Guérandaise	M	Directeur Hardy	M
Belle Julie	S	Docteur Jules Guyot	S
Bellisime d'Hiver	N	Doyenné Blanc	N
Bergamotte d'Espéren	N	Doyenné Boussoch	N
Bergamotte Hertrich	S	Doyenné d'Alençon	N
Beurré Bachelier	S	Doyenné d'Été	N
Beurré Bedford	S	Doyenné du Comice	N
Beurré Berckmans	M	Duchesse d'Angoulême	S
Beurré Brown	M	Duchesse de Bordeaux	S
Beurré Capiaumont	N	Durondeau	M
Beurré Clairgeau	M	Easter Beurré	S
Beurré d'Amanlis	N	Émile d'Heyst	N
Beurré d'Anjou	M	English Bergamot	M
Beurré d'Arenberg	M	Fertility	M
Beurré d'Avalon	N	Fondante d'Automne	N
Beurré de Jonghe	M	Fondante de Thirriott	N
Beurré de l'Assomption	S	Forelle	N
Beurré Davy	M	General Totleben	N
Beurré Diel	N	Glou Morçeau	M
Beurré Dubuisson	S	Gorham	S
Beurré Dumont	S	Grosse Calebasse	N
Beurré Dumortier	M	Haçon's Incomparable	M
Beurré Giffard	M	Hessle	S
Beurré Hardy	S	Huyshe's Prince Consort	S
Beurré Mortillet	S	Huyshe's Victoria	S
Beurré Rance	N	Jargonelle	N
Beurré Six	N	Jersey Gratioli	N
Beurré Sterckmans	M	Joséphine de Malines	S
Beurré Superfin	S	Kieffer Hybrids 1 and 2	S
Black Worcester	N	Kelway's King	S
Blickling	N	Laxton's Early Market	S
Bristol Cross	S	Laxton's Foremost	M
Brockworth Park	N	Laxton's Harvester	M
Calebasse Bosc	M	Laxton's Progress	S
Catillac	N	Laxton's Record	N
Chalk	N	Laxton's Satisfaction	S
Charles Ernest	S	Laxton's Superb	S
Chaumontel	N	Laxton's Victor	N
Citron des Carmes	N	Laxton's Wonderful	N
Clapp's Favourite	M	Le Brun	N
Colmar d'Été	N	Le Lectier	N

Variety	*Damage*	*Variety*	*Damage*
Louise Bonne of Jersey	N	Phelp	S
Madame Lyé-Baltet	N	Pitmaston Duchess	N
Madame Millet	S	President d'Osmonville	N
Madame Treyve	S	Princess	M
Magnate	N	Roosevelt	N
Maréchal de la Cour	M	Santa Claus	N
Marguerite Marillat	N	Souvenir de Congrès	M
Marie Benoist	S	Sucrée de Montluçon	N
Marie Louise	N	Summer Beurré d'Arenberg	M
Marie Louise d'Uccle	N	Swans Egg	N
Michaelmas Nelis	S	Thompson's	S
Monarch	N	Triomphe de Jodoigne	N
Monsallard	M	Triomphe de Vienne	S
Napoléon	N	Uvedale's St. Germain	N
Nec Plus Meuris	N	Van Mons	S
Nouveau Poiteau	N	Verulam	N
Nouvelle Fulvie	N	Vicar of Winkfield	N
Olivier de Serres	S	White Doyenné	S
Packham's Triumph	S	Williams' Bon Chrétien	S
Parrot Pear (Rivers)	S	Windsor	N
Passe Colmar	S	Winter Nelis	S
Passe Crassanne	S	Zepherin Grégoire	M

THE USE OF POLYTHENE COVERS FOR PROPAGATING CUTTINGS AND SEEDS

C. Brickell

(*R.H.S. Gardens, Wisley*)

A SIMPLE method of propagating plants which has recently become popular with the amateur is by the use of polythene bags. The use of polythene eliminates the need for continually watering, aerating and shading the cuttings and if they have to be left for any reason the cuttings will come to no harm, which cannot of course be done if the normal frames are used.

Pots are the most convenient rooting receptacles to use, the size depending on the number of cuttings required. The pots are crocked and filled with a cutting compost, soaked with water and left to drain. After insertion of the cuttings in the normal way, the pot is enclosed in a polythene bag and placed in a window or on a cool greenhouse shelf until the cuttings are rooted. The method of supporting the polythene can be seen in Fig. 155. Four equal lengths of bamboo, pointing outwards at an angle, are joined in pairs by curved wires, as shown, and the bag placed base upwards over this structure, so enclosing the pot. A rubber band round the base of the pot secures the polythene bag and another placed round the four canes, as shown in the covered pot on the left of the illustration, prevents the condensing water from dripping down the outside of the pot instead of back on to the soil.

The base of the pot can be covered either completely and secured with a rubber band or the drainage hole left open, the latter way preventing any stagnation which may occur. A simpler form of support of a single, central cane may be used, but it is essential to keep the leaves of the plants from touching the polythene as the continual condensation may cause rotting, and it is wiser to use four canes.

The rooting medium must be open with no tendency to pan or stagnate and horticultural vermiculite suits this purpose admirably; if the rooted cuttings are to remain in the pot for any length of time, a mixture of 1 part vermiculite to 1 part J.I. seed compost, would be preferable, as vermiculite alone has no food value.

The atmosphere inside the polythene bag is ideal for rooting, allowing sufficient light and air to pass with only a small loss of water; unfortunately it is also ideal for damping-off fungi and great care must be taken in using sterile materials.

Cuttings should be well spaced, touching as little as possible and allowing an easy flow of air; this is especially important when rooting hairy-leaved plants. It is better to keep one species to a pot as the rooting time is variable and whilst potting up some rooted cuttings, others may be disturbed.

Although requiring very little attention after insertion, a daily inspection to ensure that no damping off or drying out is occurring in the pots would be wise. Placed in a window which does not receive too much sun, the cuttings will soon root. As soon as the cuttings are well rooted young growths will begin to push out and the cuttings can then be potted up and hardened off in the usual manner.

During this summer a wide range of plants were rooted at Wisley, the pots of cuttings being placed on a window sill in the laboratory and occasionally inspected to ensure that all was well. The plants rooted include the following:

Salvia grahamii, *S. neurepia*, *S. rutilans*, *Calceolaria violacea*, *Buddleia alternifolia*, *Colquhounia coccinea*, *Lippia citriodora*, *Rosmarinus officinalis*, *Teucrium fruticans*, *Caryopteris* × *clandonensis*, ericas in variety, *Philadelphus coulteri*, *Mimulus glutinosus*, *Thunbergia natalensis*, Physostegia 'Vivid', *Hypericum patulum*, *Celastrus orbiculatus*, hydrangeas in variety, Escallonia 'Slieve Donard', *Abelia grandiflora* and Ceanothus 'Cascade'.

A similar method may be used for raising seeds. This is particularly useful, as one cause of failure of germination is by seeds starting into growth, becoming dry and failing to continue germinating. As Fig. 156 shows, polythene-covered seed boxes or pans may be used. Once the seeds begin to germinate the polythene should be removed.

Simple to construct, needing only a small amount of time and labour and able to take care of itself while the owner is away, it is an ideal method for the amateur.

A NOTE ON THE EFFECT OF P.C.N.B. IN CONTROLLING TULIP FIRE DISEASE IN THE SOIL

D. E. Green, M.Sc., and A. V. Brooks, B.Sc.
(R.H.S. Gardens, Wisley)

In recent years the substances T.C.N.B. (tetrachlornitrobenzene) and P.C.N.B. (pentachlornitrobenzene) have been claimed to possess the power of checking various fungus diseases of plants. In particular pentachlornitrobenzene is claimed to prevent to a large extent the germination of the resting-bodies (sclerotia) of tulip fire, *Botrytis tulipae* Lind., in soil contaminated with this disease.

From the horticultural point of view there is little doubt that the most serious disease of tulips is the one called "fire". It is very common on cultivated tulip hybrids and species but has not been recorded on any other kind of plant. In some seasons it causes much loss and is a constant problem not only for growers who market the blooms, but also for those who have to produce a show of flowers in formal beds in parks or gardens.

The control of this disease is difficult because it not only damages flower-buds and leaves but also grows down to infect the bulbs and contaminate the soil—this last factor is possibly its most serious aspect. It is of little use to plant good healthy bulbs in infected soil because the shoots which they produce are likely to be attacked by the sclerotia as they germinate underground.

The control of the disease therefore falls into two parts: first, the protection of shoots while still underground and, secondly, the protection of the developing flower-buds and leaves above the ground. Shoots infected under the ground usually come up in a damaged and crippled condition showing the so-called "primary infection" which produces spores in great quantity. These spores infect neighbouring plants producing the well-known spots on the leaves and flower-buds which are termed "secondary infections". Some of these secondary infections attack the stems in the axils of the lower leaves, killing the tissues and causing the whole plant to topple over and wither away.

At Wisley we have been interested for some years in the control of this disease where it affects the plants in formal beds and especially in preventing the underground infection of the shoots by the germinating sclerotia. In 1957 it was decided to carry out a test on the control of tulip fire in plots containing soil known to be heavily contaminated with the disease, by the use of a proprietary dust containing P.C.N.B. The trial area of infected soil was divided, one-half being treated with the P.C.N.B. dust at 2 oz. to the square yard, while the other was left untreated. The whole area was planted the same day with healthy tulip

bulbs, variety 'Queen of the Bartigons', using 480 bulbs to each half of the plot.

As the growing points emerged from the ground in the spring of 1958, they were kept under close observation. When a plant was considered to be so crippled by fire disease that it would not flower and would be dangerous to its neighbours it was removed. Table 1 shows the number of plants considered to be infected underground.

TABLE I

To show the number of tulip plants with shoots noted as crippled by underground infection by Fire Disease (Spring 1958)

Treatment	March 24	March 31	April 11	April 21	May 1	Total
A. Control plot untreated	75	48	24	7	7	161
B. Plot treated with P.C.N.B.	22	4	4	6	1	37

From the figures it is clear that P.C.N.B. in this experiment had a marked effect in reducing disease infection in the soil.

Differences between the treated and untreated areas of the trial plot were very marked and if infected plants had not been rigorously removed the contrast would in our opinion have been even more striking. Having regard to the figures it was not surprising that flowering in the treated plot was far superior to that in the untreated half, but in addition the foliage of the plants in the treated plot seemed more robust and of a healthier colour. At present we have no explanation for this difference.

From the evidence it seems that for the purpose of checking the attack of tulip fire fungus on the shoots underground pentachlornitrobenzene has proved most useful in a soil known to be heavily contaminated with the disease.

In conclusion, however, it must be mentioned that even though tulip plants may be protected so that they reach the surface of the soil without being infected any spray treatments against fire disease above ground cannot be begun too soon. In our opinion the first spray should be applied when the plants are an inch or two high.

NOTE FROM A FELLOW

Old Bearded Irises

How we old Victorians wish that fifty years ago we had not thrown out those old samplers, glass paper-weights, shell flowers and other rubbish in the attic, the remnants of which are now treasured and costly antiques.

The rosarians, just in time, and led by such stalwarts as A. E. BUNYARD and GRAHAM THOMAS, have rescued from near oblivion many of the old

roses which, upon the advent of the hybrid-perpetual and the hybrid-tea, were being put on the garden bonfire as worthless, but which are now cherished at their true value.

But who will do something for the old bearded irises before it is too late?

The sumptuous lovelies which are being poured out by our breeders and the Americans threaten to extinguish the quieter beauties which have graced our gardens in the past. I have in mind, as an example, 'Hakador', than which no more dainty bearded iris exists. A slender stem with light purple flowers wonderfully poised and spaced, and—a quite distinctive feature—leaves gracefully curved. I have grown it, and my father before me, for more years than I care to remember. *Eheu fugaces* . . . We have another, bearing on stiff stems a cloud of small flowers with hints of old snuff and summer skies. Another has flowers closely reticulated blue upon white. And 'Alcazar', is that soon to be but a memory?

There I finish but would ask where sanctuary is to be found for other survivors in peril until the wheel of taste turns again. Experts and judges would recoil in horror from them as their rosarian counterparts of half a century ago shuddered before the old Cabbage Rose, 'Cuisse de Nymph', 'Felicité Parmentier' and 'Rosa Mundi'—scoffed but have remained to pray.

W. P. KING

A WORLD-WIDE STUDY OF CAMELLIA CULTIVARS

OVER the years many factors have contributed to the present world-wide confusion in the status and application of camellia cultivar names. The acuteness of the situation was brought to light at the 1955 International Horticultural Congress, when no camellia organization considered itself in a position to accept an invitation to serve as the International Registration Authority for the genus. Something had to be done.

The L. H. Bailey Hortorium, at Cornell University, Ithaca, New York, proposed a five-year project designed to accomplish three things: (1) preparation of a master file of all cultivar names known to have been used for camellias; (2) preparation of a documentary record composed of herbarium specimens, notes, and colour photographs of as many cultivars as can be found in cultivation, with special reference to those in America, the British Commonwealth, and Japan; and (3) production of an annotated international check list based on the data obtained. This programme, supported by a grant from the Longwood Foundation, went into effect October 1957.

RALPH N. PHILBRICK, added to the Hortorium staff to work on this

project, is the principal investigator. The programme has the counsel of an Advisory Committee composed of: ARTHUR C. BROWN, Secretary, American Camellia Society; WILLIAM HERTRICH, Huntington Botanical Gardens; H. HAROLD HUME, University of Florida; RALPH S. PEER, President, American Camellia Society; CHARLES E. PUDDLE, Bodnant Gardens, England; J. ROBERT SEALY, Royal Botanic Gardens, Kew; PROF. E. G. WATERHOUSE, Secretary, Australian and New Zealand Camellia Research Society; and WILLIAM WOODROOF, Chairman, Nomenclature Committee, Southern California Camellia Society.

The production of an annotated international check list is considered the most practical approach towards elimination of the present confusion in camellia cultivar names. Equally essential, to ensure in so far as possible that names of current cultivars in the check list are associated with the proper plant, is documentation in the form of herbarium specimens, notations, and photographs of those cultivars. It is believed that this documentation will provide a permanent record which will be more useful than any one written description.

Many of the cultivars whose names are in the literature before 1900 are no longer grown. Many of the early descriptions are so inadequate that positive identifications cannot be made from them. Plants grown today and bearing one of these older names may or may not be the same cultivar as that to which the name was applied originally. Therefore, no solution of all the problems of synonymy that exist within the cultivated camellias is to be anticipated. At the same time, the check list, supported in part by the documentary record, can serve as the starting-point for modern camellia cultivar nomenclature and form the basis for the future. Publication of this international check list is not a part of the present project. It is anticipated that it will be turned over to an existing camellia organization for publication and maintenance—through an international registration authority.

It is well known to camellia specialists that workers in Europe, East Asia, Australia, South Africa, and the United States have not consistently and systematically informed one another of the names of new originations, nor have they made a critical comparison of the plants growing in various parts of the world under the same cultivar names. Increasing international commerce in camellias now compounds this confusion. In many instances the effect has been that the same cultivar is known by different names in different countries and—at least within the United States—by different names in the separate centres within the country. Often it is not known which of these names has priority of usage, or if any one of them properly belongs to the particular cultivar. Instances where two or more cultivars are passing under the same name are equally abundant.

In June 1958 MR. PHILBRICK transferred his base of operations from Los Angeles to the Bailey Hortorium at Ithaca, New York. A file on the origins of cultivars and of cultivar names is in preparation. Valuable data for this have been obtained from the excellent library of RALPH PEER

and that assembled through WILLIAM HERTRICH's interests at the Huntington Botanical Garden. Many other sources remain to be consulted. Preparation of a bibliography of world camellia literature, especially as it relates to cultivars and their nomenclature, is now in progress.

In the spring or summer of 1959 MR. PHILBRICK plans to visit England and Belgium to study living collections there. In London, Brussels, and Geneva he will study catalogues and records of cultivar names. Following more extended work in the camellia centres of western and southern United States, he expects to return to Britain during the blooming season of 1961 to study, photograph and prepare herbarium specimens. In 1962 a visit will be made to Japan for the same purpose.

Co-operation of camellia specialists is needed to determine locations of private holdings of catalogues, unpublished data on parentages of camellia cultivars, and the locations of outstanding living collections, together with information on their history and their availability for study purposes.

Persons having information or material that would be useful to this study are invited to advise MR. RALPH N. PHILBRICK accordingly, addressing him at the L. H. Bailey Hortorium, Cornell University, Ithaca, New York.

WISLEY TRIALS, 1958

SWEET PEAS

Eighty-three stocks of sweet peas were received at Wisley in the autumn of 1957. These, with fifty control varieties, were sown in boxes on October 7, 1957. The resulting seedlings were potted into 3-inch pots on November 10 and the pots were plunged in ashes in a cold frame for the winter. In the spring the plants were gradually hardened off in preparation for planting out, which took place on March 27, 1958. Twenty plants of each stock were grown as follows: (*a*) eight plants of each stock naturally grown, up hazel sticks, and (*b*) twelve plants of each stock cordon-grown, up bamboo canes.

During the winter of 1957–8, the site was prepared by double-digging strips 4 feet wide leaving a 2-foot-wide path between each cultivated strip. The rows of plants were then sited down the middle of the cultivated portion. Farmyard manure was incorporated into the bottom spit at the rate of one barrow-load of well-rotted manure to each 10-yard run of trench. In both the top and the bottom spits 2 oz. per sq. yard of a general fertilizer and 1 oz. per sq. yard of dried seaweed manure were applied to each 10-yard run of trench. After planting, a dressing of peat was worked into the top 2 inches of soil round the plants.

The Joint Sweet Pea Committee of The Royal Horticultural Society and The National Sweet Pea Society inspected the trial on June 24 and July 3, 1958, and on its recommendation The Royal Horticultural Society and The National Sweet Pea Society have made jointly the following awards to sweet peas.

The measurements given for 'Blue Swan' and 'Orange Wonder' are those which were taken from the plants naturally grown up hazel sticks, the

measurements given for the remaining stocks were taken from the plants grown in the cordon system. The number in brackets after the description of the stock was that under which it was grown in the trial.

BLUE SWAN. (Raised and sent by Messrs. W. Atlee Burpee Co., Burpee Building, Hunting Park Avenue, at 18th Street, Philadelphia 32, U.S.A.) **A.M.** July 3, 1958, as a variety for garden and decorative use. Plant 6½ feet high, vigorous; flower stem 16 inches long, very stiff, an average of six flowers per stem. Flowers 2$\frac{1}{16}$ inches across, 1½ inches deep, fairly well spaced, standards reflexed and much waved, wings spreading and waved, ground creamy white lightly overlaid Wistaria Blue (H.C.C. 640/2), buds creamish green; scent strong. [13]

LEAMINGTON. (Raised and sent by Rev. T. K. Colledge, 135 Leam Terrace, Leamington Spa.) **A.M.** July 3, 1958. Plant 6½ feet high, vigorous; flower stem 20 inches long, stiff, an average of four flowers per stem. Flowers 2⅛ inches across, 1½ inches deep, well spaced, standards reflexed and much waved, wings spreading and much waved, Cobalt Violet (H.C.C. 634/3) veined Cobalt Violet (H.C.C. 634/1); scent fairly strong. [7]

ORANGE WONDER. (Raised and sent by Mr. L. J. Everitt, White Gates Nursery, Little Clacton, Essex.) **A.M.** July 3, 1958, as a variety for garden and decorative use. Plant 6½ feet high, vigorous; flower stem 15 inches long, stiff, an average of four flowers per stem. Flowers 1$\frac{9}{16}$ inches across, 1¼ inches deep, well spaced, standards reflexed and waved, wings spreading and waved, a clear delicate shade of Begonia (H.C.C. between 619 and 619/1), young flowers slightly flushed Camellia Rose (H.C.C. 622/1); scent strong. [80]

PATIENCE. (Raised and sent by Messrs. W. J. Unwin Ltd., Histon, Cambridge.) **A.M.** July 3, 1958. Plant 6¼ feet high, vigorous; flower stem 16 inches long, stiff, an average of four flowers per stem. Flowers 2¼ inches across, 1¾ inches deep, fairly well spaced, standards slightly reflexed and much waved, wings spreading and waved, Cobalt Violet (H.C.C. 634/3), slightly paler colour towards margin; scent strong. [6]

PERCY IZZARD. (Raised and sent by Messrs. Robert Bolton & Son, Birdbrook, near Halstead, Essex.) **A.M.** July 3, 1958. Plant 6½ feet high, vigorous; flower stem 17 to 18 inches long, very stiff, an average of four flowers per stem. Flowers 2¼ inches across, 1½ inches deep, well spaced, standards slightly reflexed and waved, wings spreading and waved, a clear shade of Geranium Lake (H.C.C. between 20 and 20/1) white at extreme base of wings and standards; scent fairly strong. [25]

SUNRAY. (Raised and sent by Messrs. Robert Bolton & Son.) **A.M.** July 3, 1958. Plant 6 feet high, vigorous; flower stem 17 inches long, stiff, an average of four flowers per stem. Flowers 2½ inches across, 1½ inches deep, well spaced, standards slightly reflexed and waved, wings spreading and waved, Carmine Rose (H.C.C. 621/1) overlaid Vermilion (H.C.C. 18/1); scent fairly strong. [71]

PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1958

Bredia hirsuta A.M. July 29, 1958. A small shrub from Japan, up to 3 feet high with slender, spreading branches, finely pubescent and red-brown in colour, which was given the Award of Merit as a plant for the cool greenhouse. The leaves are up to 3 inches long, narrowly ovate, acute, subcordate at the base and obscurely sinuate; five to seven nerved with a number of transverse veins, ciliate and sparingly covered with white bristles on both sides. The upper surface is dark green, the underside paler, nearly grey-green. The petiole is up to 1½ inches long and clothed with long spreading, bristly hairs. The flowers, Mallow Purple (H.C.C. 630/2 to 630/3) in colour, are four-petalled and about ½ inch in diameter. They are carried in erect loose, terminal cymes about 6 inches long. Exhibited by The Director, The Royal Botanic Gardens, Kew, Surrey.

Lilium lankongense A.M. July 29, 1958. A native of China, this lily had up to ten flowers on the 3-foot spikes exhibited, with dark green linear-lanceolate leaves up to 6 inches long and ⅜ inch wide. The flowers are strongly reflexed in the manner of *L. duchartrei*, to which it is related, 3 inches across and are shades of Mallow Purple (H.C.C. 030) on a white ground, spotted purple, with a dark green blotch at the base of the segments inside. The segments are oblong-lanceolate in shape, 3 inches long and 1 inch wide. The flower is sweetly scented. Exhibited by The Hon. Lewis Palmer, F.L.S., V.M.H., Headbourne Worthy Grange, Nr. Winchester, Hants.

Ornithogalum thyrsoides 'Star of Good Hope' A.M. July 29, 1958. A large and very striking variety of this popular tender South African bulbous plant often known as 'Chincherinchee'. The strong erect scapes are about 2 feet tall and carry dense many-flowered racemes of white flowers measuring nearly 2 inches across, having a green central zone with orange anthers and borne on pedicels 2⅜ inches long. Shown by Messrs. Parigo Horticultural Co. Ltd., Bourne Road, Spalding, Lincs.

Rosa rugosa 'Frau Dagmar Hastrup' A.M. July 29, 1958. A charming variety of *R. rugosa* having similar, rugose foliage with five to nine serrate, elliptic-obovate leaflets, dark green, lustrous and glabrous above, grey-green, pubescent and reticulate beneath. The single flowers are Tyrian Rose (H.C.C. 24/3) in colour, up to 4 inches across, with pale yellow stamens and a delicious clove-like scent. They are borne singly or in clusters and are followed by crimson hips in late summer. Exhibited by The Sunningdale Nurseries, Windlesham, Surrey.

Scabiosa caucasica 'Loddon White' A.M. July 29, 1958. A very useful white variety raised by the late MR. THOMAS CARLILE. The flowers measure 3 inches across and are borne on very stiff wiry stems about

2 feet tall. The plant is of vigorous habit and has good foliage. Introduced and shown by Thomas Carlile Ltd. (Loddon Nurseries) Ltd., Twyford, Berkshire.

Veratrum album A.M. July 29, 1958. An extremely effective plant for the woodland garden, ornamental in both leaf and flower, growing to a height of 7 feet in good conditions. The stout, somewhat downy stem, carries large, alternately arranged, broadly ovate, acuminate, pleated leaves up to a foot or more long at its base, gradually becoming smaller higher up the stem. The flowers are carried in a dense raceme up to 3 feet long and are white with a green band down the reverse of each perianth segment, blotched green at the base, inside the flower. The whole inflorescence is covered with a dense, whitish down. Exhibited by the Crown Estate Commissioners, The Great Park, Windsor, Berks.

BOOK NOTES

"The Azalea Book." By Frederick P. Lee. 324 pp. Illus. (Van Nostrand & Co. Ltd., 358 Kensington High Street, London, W.14.) 67*s.* 6*d.*

Mr. Lee, the author of this book, is an American lawyer, being an expert on constitutional and administrative law, and after reading *The Azalea Book* I suggest that he has every qualification to be considered as a leading expert on azaleas, both deciduous and evergreen species or varieties.

It is claimed that this book contains everything there is to know about azaleas—a very strong boast—yet it must be admitted that this book includes a wealth of azalea knowledge, perhaps more than any other book previously published. Descriptive lists of approximately seventy species and about 4,000 varieties provide valuable information for the reader, especially so for the growers in the United States of America with its great differences and variations of climate. Chapter 3, "The Question of Hardiness", with its tables giving low-temperature zones for most of the principal cities of the U.S.A. will prove to be of the utmost importance.

The book is in four parts. Part 1, the first sixty-four pages, is a complete cultural guide dealing with the necessary information for successful azalea culture in the garden, including chapters on propagation, planting, hardiness, forcing and instructions for growing azaleas as bonsai plants. Part 2, occupying the next thirty-eight pages, deals fully with such important items as light, shade, moisture, soils and hybridization. Part 3, historical background, fifty-four pages, provides most interesting and knowledgeable reading. Kaempferi and malvatica hybrids, Satsuki azaleas, Kurume and Glen Dale hybrids, Ghent, mollis and other deciduous hybrids, together with the evergreen indicas, are all dealt with in a most authoritative manner.

The fourth and largest part of this first-class book must have involved an enormous amount of investigatory work as it gives descriptive lists of 4,000 hybrids and varieties, including colour of flower, size, habit, type and blooming period. The recommended collections for the different states of the U.S.A. and the index of azalea names at the end of the book should be found most helpful for reference purposes.

With such a vast number of descriptions, minor inaccuracies are bound to creep in, such as "'George Reynolds' (Exbury) yellow" (page 181), which should read, "'George Reynolds' (Knaphill) yellow", as the late Mr. Lionel de Rothschild bought the original seedling from Knaphill Nurseries and then named it after one of his head gardeners, Mr. George Reynolds.

On the same page the deciduous Rustica flore pleno azalea 'Homebush' is listed as a Knaphill variety. The author also differs from the generally accepted Wilson's spelling of Kurume 'Seikai' and 'Tsuta Momiji', preferring 'Sekai' and 'Tsuta Moniji'.

However, *The Azalea Book* provides a valuable and welcome addition to all lovers of azaleas, especially to American growers.

FRANCIS HANGER

"Plant Buyer's Guide." Edited by H. Gleason Mattoon. 6th edition. Royal 8vo. 298 pp. (The Massachusetts Horticultural Society, Boston, Mass, U.S.A.) $15.00.

This is described as the only authoritative source of information on the availability in the nursery trade of trees, shrubs, herbaceous plants, bulbs and seeds and the claim can well be substantiated. The majority of the sources quoted are naturally American but for a number of plants the main English nurseries are included also, although a larger representation here would add to its international usefulness. The plants are arranged alphabetically by genera and species and the nurseries by code letters listed at the beginning. This edition is greatly expanded from the 1948 one and is undoubtedly a very thorough and painstaking piece of work and should be of considerable use. It is a successor to Woodward Manning's *Plant Buyer's Index*.

In the case of named clones of genera such as *Camellia*, *Chrysanthemum*, *Iris*, *Rosa* and *Tulipa*, long lists have not been included but a reference is given to the International Registrar, where one has been appointed, and a list of nurseries specializing in these genera is given.

The Massachusetts Horticultural Society are maintaining a perpetual inventory and anticipate that the first Supplement to this list will be available in about eighteen months' time and further Supplements will be issued at intervals. Horticulturists all over the world should be grateful to them for undertaking this very arduous and time-consuming work. Nurserymen can probably help by sending the editor regular catalogues.

PATRICK M. SYNGE

"The Cream of Alpines." By Frank Barker. Royal 8vo. 86 pp. Illus. (Nelson.) 15s.

The death of Frank Barker at a comparatively early age was a great loss to those interested in the choicer rock plants, for he was among the most skilful half-dozen cultivators in the country. Those who remember the magnificent pans of kabschia saxifragas, *Primula allionii* and other delights exhibited by the Six Hills Nursery of which he was at one time manager and, later, proprietor, will I am sure endorse this judgment.

The appearance of this book should be welcomed by all those who wish to grow some of the most beautiful rock plants, of which eighty-four are here succinctly described, ranging from the easy *Aethionema* 'Warley Hybrid' to the difficult *Campanula cenisia*. In addition, the author, drawing on his extensive experience, has described in detail the methods of cultivation and propagation most likely to lead to success.

The book is illustrated with sketches which give, in most examples, an adequate idea of the plant in question. That purporting to be *Campanula cenisia* (not "cenisea") is obviously *C. zoysii*, that of *Androsace lanuginosa* does not convey, as it should, that the plant is prostrate, and that of *Oxalis lobata* is evidently sketched from a plant drawn up under glass.

The coloured plates are, alas, none too good; in general there is a blueness about the subjects which is unpleasant. This is a pity, as the format of the book is excellent with clear type and wide margins and the proof-reading has been well done. On p. 75 the pyrola should be *P. asarifolia* not "asarigolia".

However, nothing can really detract from the value of Frank Barker's sound advice and it is for this, not the pictures, that the book should be, and I hope will be, bought.

E. B. ANDERSON

"The Physiology of Forest Trees." Edited by Kenneth V. Thimann. Royal 8vo. 678 pp. Illus. (Ronald Press, New York.) $12.00.

This massive book gives the papers read to an international symposium held at the Harvard Forest, in April 1957, under the auspices of the Maria Moors Cabot Foundation. The papers are intended to give as broad a coverage as possible and so the resulting volume is almost in the nature of a text-book on forest tree physiology. The records of the discussions, suitably revised by the participants, are included. Subjects dealt with include dew absorption by conifers, the rates of water movement in trees, the rise of sap in lianas, etc. They are presented on a research level, but much of the material in them can be followed by a layman with a basic knowledge of plant physiology.

PATRICK M. SYNGE

"Weatherwise Gardening." By S. A. Searle and L. P. Smith. 246 pp. Illus. (Blandford Press, London.) 21*s*.

This is an extremely interesting book on a subject that has been strangely neglected in the past. The behaviour of plants is profoundly affected by "the weather", a subject that, in itself, is traditionally supposed to provide the Englishman with one of his principal conversational topics, yet few authors have attempted to present a rational account of the weather and its effects on garden plants. The first three sections, dealing with the general effects of climate on a garden, describe simple ways of measuring several aspects of the weather that affect plants, and then shows how the garden itself affects the microclimate in which plants grow. These three sections all break new ground, that has not previously been treated so well in any book on horticulture. The fourth section, dealing with the responses of various plant species to environment, is perhaps the least satisfactory part of the book since it attempts too much and hardly does justice to those species which have been studied most closely. It would have been helpful if more references had been given to other publications which could be consulted by anyone interested in a particular type of plant.

The book can be highly recommended to amateur gardeners, professional horticulturists and commercial growers, all of whom are likely to find much information that will help to solve their own particular cultural problems.

J. P. HUDSON

"The Encyclopaedia of Garden Pests and Diseases." By J. van Konynenburg and W. N. Lawfield. 215 pp. Illus. (Collingridge.) 42*s*.

This book is written as a reference book and, although it does not make any claim to be comprehensive, the authors have succeeded in mentioning a vast number of the common pests and diseases of horticultural plants, and have given a large amount of information on their life histories and habits as well as fairly detailed instructions on methods used in controlling them.

The book is divided into two parts. The first part, occupying about one-fifth of the whole, deals with modern practices used in controlling pests and diseases as follows: control methods, chemicals used, appliances, and the different types of diseases and pests. The second part contains the encyclopaedia proper in which the various pests and diseases are presented in alphabetical order. Each pest is described, with its life history, host plants, and suitable remedial measures. Following this is an alphabetical list of host plants and their various troubles. Thus the troubles can be traced and the appropriate remedial measures studied easily and quickly.

One cannot expect too much from a comparatively small book which endeavours to cover such a wide field of study, but for the most part the diseases and pests are adequately treated. This has been made possible by the use, in the encyclopaedia, of smaller print, which is nevertheless clear and easy to read. The layout is well arranged and there are over 200 illustrations. Of these the photographs are excellent but the line drawings are disappointing, and in no case, unfortunately, is the magnification of insect illustrations indicated.

Although this book may look small for the price it is probably the only one which deals with both pests and diseases of garden plants. It can be considered the most up-to-date book on the subject and the authors can be congratulated on the result of their labours.

D. E. GREEN AND P. BECKER

"The Craft of the Cottage Garden." By T. A. Lowe. 136 pp. Illus. (C. Arthur Pearson Ltd.) 15*s*.

This book is composed largely of a number of notes referring mainly to vegetables. There is no definite sequence to the chapters but the following chapter headings will give some idea of the contents: "Grow your own 'Beanfeasts'—for Health", "Potato Craft", "Herb Craft" and "A Hundred 'crafty' wrinkles for the Cottage Gardener's Year". Readers will find the chapter on home-made wines quite interesting, but the eight monochrome illustrations are unfortunately not of a very high standard.

"Bush Peaches." By C. P. H. Wilson. 140 pp. Illus. (W. H. & L. Collingridge Ltd., London, 1958.) 42*s*.

The publishers describe this book as "the first exhaustive book to be published in English on this specialized subject since U. P. Hedrick's *The Peaches of New York* appeared in 1917". Exhaustive, in 140 pages? Hardly that, surely?

The book is apparently compiled from a variety of sources; but as few references are given (though there is a bibliography of more than sixty entries) it is hard to judge how many of the author's recommendations are based on his own experience.

Much of the book, however, is historical; and here the word "exhaustive" might apply. Mr. Wilson has browsed widely in books ancient and modern; who, for instance, would expect to find in such a book a quotation from Belloc's *Cautionary Tales*?

The technical part of the book, though it covers the field fairly well, is often brief and sketchy; few non-technical readers would find it easy reading. There are one or two errors, perhaps no more than slips. The statement (p. 12) that "there is now no peach breeding in England" is out of date, since a project has been started at the John Innes Institution. And the advice to use a copper spray at leaf-fall (p. 95) is risky; peach trees seem peculiarly susceptible to injury by some forms of copper.

Nevertheless, the book will be useful to both amateur and commercial peach growers—if they can afford it!

N. H. GRUBB

"Beneath the Greenhouse Roof." By Charles H. Potter. Demy 8vo. 244 pp. Illus. (Angus and Robertson.) 37*s.* 6*d.*

The author repeatedly uses the term "home greenhouse", and this I feel is the keynote of the book. He obviously regards his greenhouse as an indispensable part of his life and home. This book is written throughout in an enthusiastic vein and mainly for the business man who can only give a limited time to his hobby. Though addressed to the American gardener the main part of the book could equally well apply to gardeners in this country, and there are few terms employed which are not easily understood, even though perhaps not familiar over here. Types of greenhouse construction both prefabricated and permanent are covered, different methods of heating dealt with, and automatic ventilation. Under propagation the author has compiled charts of an extremely wide range of plants raised either by seeds or cuttings in which he has packed an enormous amount of information. For raising plants from seeds he gives sowing date, optimum temperatures, flowering dates, etc., and, in vegetative propagation, dates for insertion and types of cuttings. A similar chart deals with bedding plants and indicates colours, sowing dates, ultimate height, etc.

Chapters are devoted to cut flowers, pot plants, and to the forcing of roses and other shrubs, perennials and bulbs. Quite an extensive range of "exotics" are also described and orchids and succulents also have chapters devoted to them. A good deal of up-to-date research is covered in the chapter on pests and diseases, which are again given in tabulated form.

Hydroponics and automatic watering are discussed, and the final chapter deals with the advantages to be obtained from the greenhouse.

The book contains a number of line drawings and photographs. Many of the latter, however, appear to be of commercial types of houses and crops, too large for the convenience of most "home greenhouse" gardeners.

G. W. ROBINSON

"Flower Arrangement." By Betty Massingham. 166 pp. Illus. (Penguin Books.) 6*s.*

The art of floral arrangement seems to continue to grow in popularity and a book which can help people whether they have been interested for some time or not is always welcome. This book covers the subject well and includes suggestions and ideas relating to colour, shape, containers, etc. Whether one likes or dislikes a particular arrangement is a matter of personal opinion, but there are a number of points which must be considered if an arrangement is to be a success and these are discussed in the first chapter on "Arrangement—line and colour". There are also lists of plants of interest for special occasions and which have interesting foliage, seedheads, flowers month by month, flowers of certain colours, etc. The chapter on "Dried Flowers" will be found most useful as advice is given on the actual drying of the flowers. The book is generously illustrated with both line drawings and photographs emphasizing particular points made in the text.

"Handboek der Bloemisterij, ten dienste van het middelbaar en hoger tuinbouwonderwijs en de praktijk. Deel II B Speciale cultures en exotische planten. Dicotyledonae." By D. van Raalte. 383 pp., 143 figures. (Uitgeversmij. C. Misset N.V., Doetichem, Netherlands, 1958.) D.fl. 14.

The present book is the second part of the third volume of a Dutch "Manual of Floriculture", the first part of which was reviewed in R.H.S. JOURNAL, **83**, 309. The

book is meant for agricultural colleges and advanced student gardeners as well as for practical horticulturists and floriculturists. This second part deals in systematic order with "exotic plants" of floricultural importance belonging to the Dicotyledonae.

The same remarks apply to this part as were made with respect to the earlier part: the main value of the book lies in the practical information that is given on propagation, culture and the more common diseases. The description of the genera, families and orders are rather poor and have no diagnostic value. No keys are provided. Many of the figures are even poorer in this part than in the previous one although the paper would certainly have allowed illustrations of a better quality. It is hard to see how student gardeners can obtain an insight into the taxonomic system which is used here in great detail and how they could ascertain whether the plants they have at hand bear correct names. As far as the actual culture of the plants is concerned, however, the book may prove to be a useful introduction. The details provided in this respect for the more common plants of floricultural importance give an idea of the problems involved and the same can be said of some remarks on the history of their cultivation.

F. A. STAFLEU

"Beneficial Insects." By B. D. Moreton. 5th Edn. 49 pp. 4 pp. coloured plates. Ministry of Agriculture Bulletin No. 20 (H.M.S.O.) 5*s*. 6*d*.

As a result of the spate of propaganda from the insecticide manufacturers, the gardening public has never been so insect-conscious as in recent years. Unfortunately the majority are unable to differentiate between friend and foe and tend to slaughter insects indiscriminately with any means at their disposal.

In these days of "super"-insecticides which themselves are usually indiscriminate in their action, the long-delayed 5th edition of this bulletin (rewritten and enlarged) is more than welcome and should be read by all growers, amateur or professional. Mr. Moreton has shown that the importance of beneficial insects has been emphasized rather than minimized by modern chemical control. His account of the effects of these insecticides on the natural balance of pests and predators and his suggestions for spraying without unduly upsetting this relationship, are of particular interest. The descriptions of the more important beneficial types are accompanied by accounts of their habits embodying results of the latest research and the number of excellent illustrations has been increased.

P. BECKER

The following books have been received:

"Woodpeckers in Woodlands." By C. E. Palmar. (Forestry Commission Leaflet No. 42.) 11 pp. Illus. (H.M.S.O.) 1*s*.

"Keithia Disease of Thuja plicata." (Forestry Commission Leaflet No. 43.) 5 pp. Illus. (H.M.S.O.) 1*s*. 3*d*.

"Honey Fungus." (Forestry Commission Leaflet No. 6.) Revised 1958. 5 pp. Illus. (H.M.S.O.) 6*d*.

"Report on Fruit Trials in Scotland, 1949–56." Scottish Agricultural Improvement Council. (The Edinburgh and East of Scotland College of Agriculture.)

ERRATUM

R.H.S. JOURNAL, Vol. 82, p. 31. Amendment to description of Dahlia 'Cheerio'. This should now read: Flowers 4¾ inches diameter, Tyrian Purple (H.C.C. 721/1), florets tipped white.

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Information about manganese deficiency in garden and orchard plants may be obtained from our Agricultural Department.

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